

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/CN2005/002402

## A. CLASSIFICATION OF SUBJECT MATTER

See extra sheet

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

G06F1/30(2006.01),G06F1/18(2006.01),G06F1/00(2006.01),H02M5/45(2006.01),H02M3/22(2006.01),H02M7/42(2006.01),H02M1/14(2006.01),H02M1/10(2006.01),H02J9/06(2006.01),H02J7/00(2006.01)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CNPAT WPI EPODOC PAJ: alternating, direct, current, inverter, rectifier, converter, power, source, supply, offer, input, output, second, multi, AC, DC, voltage, battery, switch, failure, error

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US5563778A (LG IND SYSTEMS CO LTD [KR]) 8 Oct 1996 (1996-10-08) see the page 1, column 1, line 20-37	1-3,8,15
A		4-7,9-14,16-29
Y	WO9115048A2 (AKDOGAN OEZKAN [DE]) 3 Oct 1991 (1991-10-03) see the page 5 line 19 to page 6 line 10	1-3,8,15
A		4-7,9-14,16-29
A	CN1484355A ((NASC-N) NAT SCI & TECHNOLOGY DEV OFFIC) 24 Mar 2004 (2004-03-24) see whole document	1-29
A	CN1122465A (SAMSUNG ELECTRONICS CO LTD) 15 May 1996 (1996-05-15) see whole document	1-29

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

\* Special categories of cited documents:

“A” document defining the general state of the art which is not considered to be of particular relevance

“E” earlier application or patent but published on or after the international filing date

“L” document which may throw doubts on priority claim (S) or which is cited to establish the publication date of another citation or other special reason (as specified)

“O” document referring to an oral disclosure, use, exhibition or other means

“P” document published prior to the international filing date but later than the priority date claimed

“T” later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

“X” document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

“Y” document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

“&”document member of the same patent family

Date of the actual completion of the international search  
22.Sep 2006 (22.09.2006)

Date of mailing of the international search report  
16 · NOV 2006 (16 · 11 · 2006)

Name and mailing address of the ISA/CN  
The State Intellectual Property Office, the P.R.China  
6 Xitucheng Rd., Jimen Bridge, Haidian District, Beijing, China  
100088  
Facsimile No. 86-10-62019451

Authorized officer  
ZHAO, Weihua  
Telephone No. (86-10)62085024



# INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2005/002402

CLASSIFICATION OF SUBJECT MATTER:

G06F 1/30(2006.01)i

H02J 9/06(2006.01)n

**INTERNATIONAL SEARCH REPORT**  
Information on patent family members

International application No.  
PCT/CN2005/002402

Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
US5563778A	08.10.1996	ITMI942569A	21.06.1995
		IT1271302B	27.05.1997
		JP7336913A	22.12.1995
		ES2103668AB	16.09.1997
WO9115048A2	03.10.1991	DE4108259AC	02.10.1991
		AU7459491A	21.10.1991
		PL293190A	26.06.1992
		PL166283B	28.04.1995
		EP0521901AB	13.01.1993
		EP19910905773	15.03.1991
		AT111264T	15.09.1994
		DE59102851D	13.10.1994
		ES2062773T	16.12.1994
		DK521901T	10.04.1995
		TR27883A	11.10.1995
CN1484355A	24.03.2004	None	
CN1122465A	15.05.1996	CN1083585C	24.04.2002
		JP8194564A	30.07.1996
		JP3625321B2	02.03.2005
		KR9700258B	08.01.1997
		US5657257A	12.08.1997
		US5808881A	15.09.1998

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

To:

100011  
22/F, Great Eagle Centre, 23 Harbour  
Road, Wanchai, HONG KONG, P.R. China  
CHINA PATENT AGENT(H.K.) LTD

# PCT

## WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43 *bis*.1)

Date of mailing

~~16~~ NOV 2006 (16 . 11 . 2006)

Applicant's or agent's file reference

FPEL05150073

**FOR FURTHER ACTION**

see paragraph 2 below

International application No.

PCT/CN2005/002402

International filing date (*day/month/year*)

30. Dec 2005 (30.12.2005)

Priority date (*day/month/year*)

International Patent Classification (IPC) or both national classification and IPC

See supplemental box

Applicant

INTEL CORPORATION et al

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

### 2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/CN

The State Intellectual Property Office, the  
P.R.China 6 Xitucheng Rd., Jimen Bridge,  
Haidian District, Beijing, China 100088  
Facsimile No. 86-10-62019451

Date of completion of this opinion

22.Sep 2006 (22.09.2006)

Authorized officer

ZHAO, Weihua

华赵  
印伟

Telephone No. (86-10)62085024

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITYInternational application No.  
PCT/CN2005/002402

## Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of:
  - ☒ the international application in the language in which it was filed
  - ☐ a translation of the international application into \_\_\_\_\_, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of :
  - a. type of material
    - ☐ a sequence listing
    - ☐ table(s) related to the sequence listing
  - b. format of material
    - ☐ on paper
    - ☐ in electronic form
  - c. time of filing/furnishing
    - ☐ contained in the international application as filed
    - ☐ filed together with the international application in electronic form
    - ☐ furnished subsequently to this Authority for the purposes of search
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/CN2005/002402

**Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement:**

Novelty (N)	Claims	1-29	YES
	Claims		NO
Inventive step (IS)	Claims	4-7,9-14,16-29	YES
	Claims	1-3,8,15	NO
Industrial applicability (IA)	Claims	1-29	YES
	Claims		NO

**2. Citations and explanations**

**(1) Reference is made to the following documents:**

D1:US5563778A (LG IND SYSTEMS CO LTD [KR]) 8 Oct 1996 (1996-10-08)  
D2:WO9115048A2 (AKDOGAN OEZKAN [DE]) 3 Oct 1991 (1991-10-03)  
D3:CN1484355A ((NASC-N) NAT SCI & TECHNOLOGY DEV OFFIC) 24 Mar 2004 (2004-03-24)  
D4:CN1122465A (SAMSUNG ELECTRONICS CO LTD) 15 May 1996 (1996-05-15)

**(2) Novelty and Inventive Step:**

The subject matters of claims 1-29 of the present invention are technical solutions of uninterrupted power supply for computer systems.

The subject matters of claim 1-29 differ from these known D1,D2,D3,D4 in that: a first unit outputs an AC input voltage and produces an AC output voltage and a second unit produces a DC output voltage and produces the DC output voltage. The subject matters of claim 1-29 are therefore new (Article 33(2) PCT).

The present application does not meet the criteria of Article 33(1) PCT, because the subject matter of claim 1 does not involve an inventive step in the sense of Article 33(3) PCT.

The document D1 is regarded as being the closest prior art to the subject matter of claim 1, and discloses an improved uninterrupted power supply system. The system includes a converter for converting alternating current voltage into a direct current voltage, an inverter for modulating the direct current voltage outputted from a battery or the converter, a first switch for switching the voltage modulated at the inverter, a second switch for switching the alternating voltage inputted via a bypass line.

The subject matters of claims 1-3 therefore differ from this known D1 in that: the second unit produces the DC output voltage.

However, these features have already been employed for the same purpose in a similar converter, see document WO9115048A2. It would be obvious to the person skilled in the art, namely when the same result is to be achieved, to apply these features with corresponding effect to a converter according to document D1, thereby arriving at a converter according to claim 1.

The same reasoning applies to the subject matters of the corresponding independent claims 8 and 15, which therefore are also considered not inventive.

The claims 4-7,9-14,16-29 are considered to have an inventive step (PCT Article 33(3)) because the document D1 does not disclose a rectifier and a second converting unit or a charger. And further the technical solutions in claims 4-7,9-14,16-29 are not obvious to a person skilled on the basis of D1,D2,D3 and D4 or their combinations. Thus, claims 4-7,9-14,16-29 have inventive step under PCT Article 33(3).

**(3). Industrial Applicability:**

Claims 1-29 of the present invention meet the criteria set out in PCT Article 33(4) because they are directed to a technical solution of uninterrupted power supply for computer systems. Therefore, the claims 1-29 are considered to be industrially applicable.

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/2005/002402

Supplemental Box

CLASSIFICATION OF SUBJECT MATTER:

G06F 1/30(2006.01)i

H02J 9/06(2006.01)n